YW Route Modernisation

EIA Scoping Report

November 2024

Land & Planning

CONTROL SHEET

Client: SPEN
Project Title: YW Route Modernisation
Report Title: EIA Scoping Report
Document number: 14501
Project number: 179852

Issue Record

Issue	Status	Author	Reviewer	Approver	Issue Date
1	Draft	NI	IB	EC	25th October 2024
2	Amendments to Draft 1	NI	EC	GD	29th November 2024

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1 INTRODUCTION

1.1 Terms of Reference

EnviroCentre Limited was commissioned by Scottish Power Energy Networks (SPEN) to prepare an Environmental Impact Assessment (EIA) Scoping Report for the reinforcement of existing overhead lines (OHLs) on the North Argyll route. The project specifically comprises the uprate of:

- YX 275kV double circuit OHL route between Cruachan and Dalmally to enable a 50°C maximum operating temperature; and
- YW 275kV double circuit OHL route between Dalmally and Windyhill to enable a 90°C maximum operating temperature.

Both OHL routes are shown in Drawing No 179852-GIS001 (provided in Appendix A). The proposed works will entail the increase in tower heights, replacement of crossarm and insulators of some towers and removal of ground clearance infringements. This Scoping Report relates to part of the YW route for the reasons set out in Section 1.2 of this report.

1.2 The Regulations and Consents

1.2.1 Introduction

The overarching legislation in relation to generation, transmission, distribution and supply of electricity is the Electricity Act 1989 ("the Act"). Consent is required under Section 37 of the Act to install and operate overhead power lines and associated ancillary development with applications being processed by the Energy Consents Unit (ECU) on behalf of the Scottish Ministers.

The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 ("the EIA Regs") defines whether an Environmental Impact Assessment Report (EIAR) is required to accompany any Section 37 application. Refer to Section 3 for further information.

Once a Section 37 consent is granted, the Scottish Ministers may direct that planning permission for that development shall be deemed to be granted (in terms of Section 57(2) of the Town and Country Planning (Scotland) Act 1997), subject to such conditions (if any) as may be specified in the direction.

Section 37(2) of the Act provides certain exemptions from the consenting procedures with the Overhead Lines (Exemption) (Scotland) Regulations 2013 ("the OHL Exemption Regs") specifically defining exemptions for certain minor works to OHLs.

1.2.2 YX Route

The proposed works to YX route is located within the Argyle and Bute Council area and comprises the increase in the heights of certain towers. As the increase in tower heights does not exceed the height of the highest existing support, or support which is being replaced, by more than 20 per cent it is thereby considered permitted development under Regulation 4 of the OHL Exemption Regs. Refer to Appendix B for further information.

1.2.3 YW Route

The proposed works to YW route fall within the Loch Lomond and Trossachs National Park (LLTNP) area as defined by The Loch Lomond and The Trossachs National Park Designation, Transitional and Consequential Provisions (Scotland) Order 2002. Section 7 of this Order transfers the functions exercisable by a planning authority to the National Park Authority.

Regulation 5(1)(c) of the OHL Exemption Regs places a restriction on the exemptions where the development is located within a National Park or a National Scenic Area. As such, the proposed works to YW route shall require a Section 37 consent. The proposed works within the LLTNP fall within the description of Schedule 2 development, and thereby the Section 37 application requires to be accompanied by an EIAR (Refer to Section 3 for further details).

1.3 Scope of Report

This Scoping Report has been prepared under the EIA Regs for submission to the Scottish Minister and includes (as per the requirements of Regulation 12(2)):

a) A description of the location of the development, including a plan sufficient to identify the land;
b) A brief description of the nature and purpose of the development and its likely significant effects on the environment; and
c) Such other information or representation as the developer making the request may wish to provide or make.

As the proposed works are to an existing OHL, it is considered that once completed, the operation will be unchanged, with one exception in relation to potential landscape and visual impacts associated with proposed changes in tower heights. For development of this type, decommissioning is not envisaged. Should decommissioning be considered in the future, then an application will be made for the works at that time, although it is considered that the environmental effects associated with decommissioning will be similar to those incurred during construction. This Scoping report therefore pertains specifically to the construction phase of the development with the exception of landscape and visual, which incorporates consideration of the operational phase impacts of changes to tower heights.

The Scoping Report is structured as follows:-

- Section 2 provides general information about the need for development, consideration of alternatives, stakeholders and project team;
- Section 3 sets out the approach to EIA based on the legislative context;
- Section 4 sets out a description of the site and the proposed development;
- Sections 5 -9 discuss potentially significant environmental effects on a topic-by-topic basis and offer methodologies for the assessment of those environmental topics;
- Section 10 documents the topics that are not considered to require full EIA; and
- Section 11 draws together the conclusions reached for each topic considered in the Scoping Report.

1.4 Report Usage

The information and recommendations contained within this report have been prepared in the specific context stated above and should not be utilised in any other context without prior written permission from EnviroCentre Limited.

If this report is to be submitted for regulatory approval more than 12 months following the report date, it is recommended that it is referred to EnviroCentre Limited for review to ensure that any relevant changes in data, best practice, guidance or legislation in the intervening period are integrated into an updated version of the report.

2 GENERAL INFORMATION

2.1 The Need for Development

As part of their commitments to tackling climate change, the Scottish and UK Governments have set legally binding targets to reach net zero in their greenhouse gas emissions by 2045 in Scotland and by 2050 in England and Wales. In delivering net zero, the demand for electricity is forecast to grow rapidly over the next few years, with electric vehicles replacing petrol and diesel, and increased electrification of heating, industry and transport networks. In addition, the electricity generation system is undergoing transformational change with traditional power stations being replaced by renewable sources, i.e., hydro and wind power etc.

These cleaner, greener generation sources are often located in more rural areas than the older fossil-fuelled sources they are replacing, which tend to be in or close to urban areas. As such, the electricity transmission network requires to be modernised and reinforced to allow electricity to be distributed from these new green generation sources to end users, i.e., homes, businesses, hospitals and public services.

This transition in generation sources means Scottish and Southern Electricity Networks (SSEN) Transmission, the electricity transmission owner for the north of Scotland, needs to uprate and reinforce the Argyll transmission network from 132kV to 275kV operation. This up-rated route ties into the existing YX 275kV double circuit OHL route at Cruachan, Argyll & Bute. The YX route connects to the existing YW 275kV double circuit OHL route at Dalmally, Argyll & Bute which connects to the Windyhill substation in Milngavie. The YX and YW route is owned by SPEN.

The YX and YW 275kV double circuit OHL routes were constructed by the North of Scotland Hydro Electric Board between 1961 and 1963 as a rural supply network. Both OHLs are supported primarily on steel lattice towers and cover a distance of 8.1km and 76.57km respectively, across rural exposed terrain. To ensure the security of supply to the wider national electricity network, there is a need for these OHLs to be up-rated.

2.2 Consideration of Alternatives

The operation of the high voltage (i.e., 275 and 400kV) electricity transmission system in Great Britain is the responsibility of the National Grid System Operator (NGESO). Its primary purpose is to enable the efficient transmission of electricity generated from renewable sources nationwide. Annually, NGESO undertakes a Network Options Assessment (NOA), which considers projects proposed by Transmission Operators (TO) such as SSEN and SPEN to provide network capacity and thereby meet the future needs of the national electricity transmission network. This process identifies projects that will be beneficial to support and enhance transmission capacity between TO areas, along with the optimal timing of these projects.

Due to the established location and infrastructure in place along the present OHL routes, no alternative sites for the proposed development have been considered. However, alternative approaches to how the works will be undertaken have been considered. The scoping and EIA process are anticipated to influence the resulting construction method.

2.3 The Applicant

SPEN is the trading name for Scottish Power Energy Network Holdings Limited. SPEN owns and operates the electricity transmission and distribution networks in central and southern Scotland through its wholly-owned subsidiaries SP Transmission plc (SPT) and SP Distribution plc (SPD). These businesses are 'asset-owner companies' holding the regulated assets and Electricity Transmission and Distribution Licenses. SPT plc is the transmission licensee.

SPT plc has a crucial role to play in that its transmission network enables the bulk transfer of renewable energy generated within its licence area, as well as within SSEN Transmission's licence area to the north, south to the wider nation.

Under the Act, SPT is subject to a number of statutory duties and licence obligations. These include a requirement "to develop and maintain an efficient, coordinated and economical system of electricity transmission". SPTs also required to:

- provide for new electricity generators wishing to connect to the transmission system in its licence area; and
- to make its transmission system available for these purposes and to ensure that the system is fit for purpose through appropriate reinforcements to accommodate the contracted capacity.

In addition, it is subject to duties under Schedule 9 of the Act which stipulates:

"(a) to have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest; and
(b) to do what it reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects."

2.4 Project Team

This Scoping Report has been prepared by EnviroCentre Ltd with initial input from other organisations, as shown in the table below.

Table 2-1: Project Team

Topic	Specialist
The Client	SP Energy Networks (SPEN)
Biodiversity, Hydrology, Geology and Soils, Landscape and Visual, Heritage and "Topics Not Requiring Full EIA"	EnviroCentre Ltd
Planning	David Bell Planning
Landscape Architecture, Landscape and Visual Impact Assessment	MVGLA Landscape Architecture

The project team benefits from significant experience and technical expertise in environmental assessment and will ensure that the EIA will be carried out in accordance with the EIA Regulations.

3 APPROACH TO EIA

3.1 Screening under the EIA Regs

As noted in Section 1.2.3, the proposed works on the YW route are located within the LLTNP and, as such, a Section 37 consent is required. We are of the opinion that the works do not fall within a Schedule 1 description of the EIA Regs but that it does meet the description of Schedule 2(1)(a) and (b) as follows:

> "*1. The carrying out of development (other than development which is Schedule 1 development) to provide any of the following - …….*
>
> *(2) an electric line installed above ground –*
>
> *(a) with a voltage of 132 kilovolts or more;*
> *(b) in a sensitive area; ……..”*

3.2 Scoping under the EIA Regs

The EIA Regs state that a developer may ask the Scottish Ministers for their formal opinion on the information to be supplied in the EIA Report (a ‘scoping opinion’). This provision allows the developer to be clear about what significant effects of the development are likely to be and, therefore, the topics on which the EIA report should focus.

Additional objectives of EIA Scoping are to:

- Establish the availability of baseline data;
- Request that statutory consultees provide any relevant environmental information relating to the site and surrounding area;
- Define a survey and assessment framework through which comprehensive impact assessment can be achieved; and
- Provide a focus for the Scottish Ministers and the consultees’ considerations in terms of:
    - Potential impacts to be assessed;
    - Assessment methodologies to be used;
    - Other areas which should be considered; and
    - Any other environmental issues of perceived concern.

In accordance with the EIA Regs, this Scoping Report is submitted to the Scottish Ministers with the intention that it should form the basis of their Scoping Opinion. Other statutory consultees, local people and organisations and other stakeholders are invited to comment on the potential environmental effects to be included within the EIA and the assessment methodologies to be used. As such, it should be noted that this document does not seek to assess the environmental effects of the proposed development as this is the purpose of the EIAR, which will be carried out once the design has been fully evolved, including design-led mitigation as required.

3.3 Appraisal of Potentially Significant Environmental Effects

The information contained in this document is based on our current understanding of the nature of the site and the proposed development and preliminary assessment of the potential environmental

impacts of the proposed development. The general environmental topic areas to be considered within the context of EIA are summarised below:

- Population / Human Health;
- Biodiversity (e.g., Fauna and flora in particular species and habitats protected under any law that implements Council Directive 92/43/EEC on the conservation of natural habits and of wild fauna and flora and Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds);
- Land, soil, water, air and climate; and
- Material assets, cultural heritage and the landscape.

Each of the technical topic Sections considered in this Scoping Report (Sections 5-9) are generally structured as follows:

- Introduction;
- Baseline Conditions;
- Potential Significant Effects;
- Inclusion or Exclusion from EIA;
- Assessment Methodology (if applicable); and
- Mitigation and Enhancement.

3.4 Cumulative Assessment

It is not proposed to incorporate a section within the EIA report dedicated to cumulative assessment. Instead, the Chapter for each environmental discipline will consider the potential for cumulative impacts within their individual impact assessments.

The planning portal of LLTNP was referred to and the developments in Table 3-1 were identified within proximity to the area of works.

Table 3-1: Cumulative Developments

Planning Ref	Address	Description	Comment
2024/0219/NOT	Land South of Loch Oss, Caorann Glenfalloch Estate	Works for the restoration of peatland	Granted – August 2024. Works scheduled for late 2024 but access to area over a 10 year period needed for maintenance works if required.
2022/0184/NOT	Glenfalloch Estate Inverarnan Stirlingshire G83 7DX	Works for the restoration of peatland	Granted – July 2022. Works completed late 2022 but access to area over a 10 year period needed for maintenance works if required.
2021/0275/NOT	Oss Flats, Land to South East of Ben Oss, Between Allt Fionn Ghlinne and Dubh Es, Glen Falloch	Works for the restoration of peatland	Granted – Aug 2021. Works completed late 2021 but access to area over a 10 year period needed for maintenance works if required.

2021/0391/HAE	Hillview Cottage Aberfoyle Stirling FK8 3TY	Proposed 2 no. single storey extensions to dwelling house comprising one wraparound extension to side and rear and one separate extension to the rear.	Granted February 2022. Expires 3 years from date of permission.

3.5 Pre-Application Consultation

The Applicant recognises the importance of consultation and community involvement throughout the project process.

The Energy Consents Unit (ECU) Good Practice Guidance for Applications under Section 36 and 37 of the Electricity Act 1989 (Updated July 2022)[1] sets out the procedures for Section 37 applications for proposed EIA developments. In accordance with the guidance, consultation and engagement with the public will be undertaken during the pre-application period, with two public consultation events being held prior to submission of the Section 37 application. A Pre-Application Consultation report ("PAC Report") summarising the actions undertaken to accord with the guidance shall accompany the application.

[1] https://www.gov.scot/binaries/content/documents/govscot/publications/advice-and-guidance/2022/02/good-practice-guidance-applications-under-sections-36-37-electricity-act-1989/documents/energy-consents-unit-good-practice-guidance-applications-under-sectio

4 THE PROPOSED DEVELOPMENT

4.1 Introduction

Preliminary surveys have identified certain topographical infringements of the safety zones below specific spans (i.e., sections between towers) are present on the YW 275kV double circuit OHL route between Dalmally and Windyhill. As a result, works are necessary to reduce power outages and thereby maintain electricity supply. Solutions to remove the infringements are:

1 Ground re-profiling;
2 Increase the tower heights at the end of the span; and/or
3 Replace the crossarm system.

The proposed development description provided below focuses on those areas of work that are located within LLTNP and subject to the Section 37 consent.

In general, the works shall entail:

- Access to the sites;
- Creation of temporary work areas;
- Implementing the solution to removing the safety zone infringements; and
- Restoration.

4.2 LLTNP

The National Park (Scotland) Act 2002 provides the legal framework for establishing National Parks in Scotland. The principles of the National Parks (Scotland) Act aims:

a) "to conserve and enhance the natural and cultural heritage of the area,
b) to promote sustainable use of the natural resources of the area,
c) to promote understanding and enjoyment (including enjoyment in the form of recreation) of the special qualities of the area by the public, and
d) to promote sustainable economic and social development of the area's communities."

The LLTNP is recognised as Scotland's first National Park. It was formally established in 2002 and spans an area of 1,865km^2 comprising outstanding landscapes, habitats and communities.

The landscapes of the LLTNP range from uplands to sea lochs, with the entire topography being a result of the Highland Boundary Fault, which provides the geographical definition to the area of Highlands and Lowlands. The LLTNP is home to Scotland's largest loch, Loch Lomond, numerous Munro's and Corbett's and two forest parks.

4.3 Works Location within LLTNP

Due to the distances involved, the works area has been divided into three sections, namely Area A to the northwest of Inverarnan, Area B to the southeast of Inverarnan, and Area C located between Loch Arklet and Loch Katrine. Table 4-1 provides details of the infringement, potential solutions and the area of the route in which the works are located. Drawings 179852-GIS34, 35 and 36 (provided in Appendix A) show the locations of the infringement and the tower locations.

Table 4-1: Infringement Locations, Potential Solution and Area

Span (Sections between Towers)	Ground Clearance Infringement (m)	Proposed Solution	Area
YW050 – YW051	-0.49	Remove infringement (approx. 238m^2)	A
YW059 – YW060	-0.62	Remove infringement (approx. 238m^2)	A
YW060 – YW061	-2.04	Option 1 - Ampjack 3.2m Extension to tower YW061 Option 2 – Ground re-profiling (approx. 137m^2)	A
YW072 – YW073	-1.38	Option 1 - Ampjack 3.2m Extension to tower YW073 Option 2 – Ground re-profiling (approx. 138m^2)	B
YW073 – YW074	-0.04	Option 1 - Ampjack 3.2m Extension to tower YW073 Option 2 – Ground re-profiling (approx. 4m^2)	B
YW079 – YW080	-1.36	Option 1 - Ampjack 3.2m Extension to tower YW080 Option 2 – Ground re-profiling (approx. 56m^2)	B
YW080 – YW081	-1.53	Option 1 - Ampjack 3.2m Extension to tower YW080 Option 2 – Ground re-profiling (approx. 185m^2)	B
YW080 – YW081	-0.89	Option 1 – Proposed site for insulated crossarm solution with a shift on attachment point and possible peak modification given tower existing YW88 already has STS. Option 2 – Ground re-profiling (approx. 126m^2)	B
YW098 – YW099	-5.06	Option 1 - Ampjack 6.4m Extension to tower YW098 & Ampjack 6.4m Extension to tower YW099 Option 2 – Ground re-profiling (approx. 138m^2)	C
YW103 – YW104	-2.26	Option 1 - Ampjack 3.2m Extension to towers YW103 & YW104 Option 2 – Ground re-profiling (approx. 540m^2)	C
YW111 – YW112	-0.58	Option 1 - Proposed site for insulated crossarm solution with a shift on attachment point and possible peak modification given tower existing YW112 already has STS. Option 2 – Ground re-profiling (approx. 153m^2)	C

4.4 Access tracks

Access to the site will be undertaken at different locations off the A82 and Loch Katrine access roads.

Access track drawings have been provided in Appendix C.

Access to OHL YW050, YW051, YW059, YW060, and YW061 will be provided from the A82 on an existing gravel access track located by the Glen Falloch Weir (NGR 31905 19684). The track zigzags away from the A82, heading Northwest initially before linking to the OHL points outlined above (among others).

Access to OHL towers YW072, YW073, YW074, YW079, YW080 and YW081 will be provided south off the A82, on existing gravel farm tracks. Access from the A82 located at NGR NN 32570, 20201.

Access to OHL YW098, YW099, YW103 and YW104 will be from separate tracks of the Loch Katrine access road located at NN 38038 13434, NN 39249 12048, NN39981 11124 and NN40093 08838 respectively.

Access to OHL towers YW111 and YW112 will be provided directly from the B829 on the west side of Loch Katrine at NN 40781 08453.

4.5 Infringement Solutions

4.5.1 Ground Reprofiling

This solution requires the removal of the infringement through groundworks using equipment such as excavators and bulldozers to reprofile the surface and thereby increase the distance to the OHL. The area will then be restored once works are completed.

4.5.2 Increase Tower Heights

Where the tower heights are undergoing height extensions, work will be undertaken using a technology called the AMP Jack Lifting System. The process allows the towers to remain under load, and the lines remain energised, while the height of the tower lines will be increased. The height extensions can be undertaken in 1.6m increments. Through using the AMP Jack Lifting systems, the need for outages and additional planning constraints that can be associated with traditional methods of tower height increase can be avoided.

4.5.3 Cross-Arm Replacement

This solution involves Retro-insulated cross arms (RICA) replacing the existing crossarm and insulators, thereby reducing loads to the existing tower structures and foundations. These uprates provide system reliability improvements by reducing the need for numerous outages and planning constraints. The use of RICA results in the safety zone distances being increased without the need to increase tower heights by ensuring the lighting protection/earth wire shielding angle is maintained.

4.6 Temporary Works Area, Site Compound and Reinstatement

As part of the construction works, temporary works may be required specifically related to access routes and to create working platform areas in and around the specific towers and ground infringement areas. This would incorporate elements such as topsoil stripping and storage and the development of working platforms. In addition, a site compound area with associated parking and equipment storage areas will be created.

On completion of the construction activity, reinstatement works will be undertaken, which will incorporate elements such as the removal of the temporary features (such as compound area and access roads) and appropriate replacement of any soils that were stripped during the works.

4.7 Construction Environmental Management

The key construction environmental management measures for OHL power transmission are as follows:

4.7.1 Site Preparation

- Only the necessary area will be cleared of vegetation.

- Mature trees and natural vegetation will be retained wherever possible.
- Areas with sensitive habitats, such as wetlands, nesting sites, and protected species areas will be avoided and, if found nearby, then buffer zones would be created around those areas.
- Best construction practices, such as regular cleaning of equipment, will be followed to prevent the spread of invasive species.

4.7.2 Soil Management

- Limiting the excavation to what is necessary and storing the topsoil separately for use in the site restoration works.
- Avoiding soil compaction, especially in wet conditions, to maintain soil structure and permeability.

4.7.3 Watercourse Protection

- Installation of temporary drainage systems to divert runoff away from water bodies.
- Ensuring no construction materials, debris, or pollutants enter nearby watercourses.

4.7.4 Air Quality and Noise Management

- Employing dust suppression measures such as water sprays, covering of soil, and material stockpiles.
- Implementing best construction practices such as maintaining equipment and using quieter machinery to reduce noise generation.
- Restricting construction activities to daytime hours to reduce noise disturbance.

4.7.5 Waste Management

- Best construction practices, such as reusing material whenever possible, are to be followed, resulting in reduced waste generation.
- Segregate waste on-site for recycling and proper disposal.

4.7.6 Emergency Response and Contingency Planning

- Ensuring proper handling of fuels, oils, and chemicals and setting up spill prevention and response plans. Keeping spill kits on-site.
- The site workers will be trained in spill response procedures.
- Regularly inspecting the machinery to prevent leaks and spills.
- Having firefighting equipment readily available on-site.

4.7.7 Waste Generation and Waste Management

- Given the nature of operations on site, it is considered there will be a relatively low requirement for import of materials, and a low volume of waste will be generated;
- Vegetation and topsoil will not be harvested for commercial use will be stored or redistributed on-site to support restoration once the work is complete;
- Road surfaces, for most areas are existing but where access roads are needed to be formed, where possible in situ substrates and aggregates recycled from site operations will be used for this purpose; and

- Waste materials such as packaging, waste oils and plastic culvert pipe offcuts will be carefully managed, stored and disposed of at suitable offsite facilities, following relevant waste management guidance.

5 BIODIVERSITY

5.1 Introduction

This section describes the known baseline conditions and highlights the potential impacts of the proposed development on the ecology of the area including the associated interactions with the water environment.

The biodiversity assessment will consider the potential effects of the Reinforcement works along the YW OHL route on the following biodiversity features:

- Designated sites;
- Terrestrial habitats and species; and
- Birds.

5.2 Baseline Conditions

5.2.1 Designated Sites

The Designated Site Features within 5km of the specific YW OHL tower locations where uprated works are identified, are described below and shown in Drawing No 179852-GIS049, Appendix A.

Loch Lomond Woods SAC
The Loch Lomond Woods Designated Special Area of Conservation is a qualifying protected area due to the presence of Annex I habitats (91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles), and Annex II species - the Otter (*Lutra lutra*).

Glen Etvie and Glen Fyne (SPA)
The Citation for the Glen Etvie and Glen Fyne SPA provided by Scottish Natural Heritage states *"Glen Etive and Glen Fyne Special Protection Area (SPA) is a large, predominantly upland site in the south west Highlands of Scotland. The site rises from sea level to over 1100 m and encompasses a diverse range of habitats including heather moorland, rough grassland, blanket bog, native woodland, montane heaths and exposed rock and scree. There are also numerous freshwater lochs and river systems."*

The qualifying interest for this SPA is the support of the European Importance Annex 1 species Golden Eagle.

Glen Falloch Woods SSSI
NatureScot's Citation for Glen Falloch Woods SSSI is described as: "*The Glen Falloch Woods comprise three areas of ancient deciduous woodland which represent the largest and least disturbed remnants of the formerly extensive native broadleaf woods at the head of the Loch Lomond catchment. A variety of different woodland types are represented, ranging from upland birchwoods on nutrient poor soils, with a high proportion of rowan, through western oak woodland to flushed slope woods dominated by ash and alder, on soils of varying nutrient status. The woods have a diverse structure and in places an unusually extensive shrub layer dominated by hazel.*

The Glen Falloch Woods are part of the very extensive mixed deciduous woodlands which lie within the Loch Lomond area. This complex is one of the largest in Scotland and has a very diverse structure and species composition reflecting the variety of soils, aspects and previous management."

Pollochro Woods SSSI
NatureScot's Citation for Pollochro Woods SSSI is described as: "s*ituated on steep, westerly facing slopes at the north end of Loch Lomond, just to the north of the hamlet of Inversnaid.*

The SSSI supports an extensive area of semi-natural woodland, most of which is of ancient origin. It represents one of the largest areas of wet woodland in the Stirling Council area. Wet woodland is characteristic of the western highlands and has a canopy dominated by alder, with oak, birch, hazel and ash. Shrub species present include hawthorn and holly. Within the wet woodland, at the southern end of the site, there is also a small area of even-aged oak coppice woodland."

Geal and Dubh Lochs SSSI
NatureScot's Citation for Gea and Dubh Lochs is described as *"Geal and Dubh Lochs Site of Special Scientific Interest (SSSI) is located 10 km south of Crianlarich where the River Falloch flows into the north end of Loch Lomond. It is of botanical importance for the emergent and submerged plant species in the two oligotrophic lochs and for the diversity of mire and fen communities that make up the hydromorphological mire range."*

Ben Lui SSSI
NatureScot's citation for Ben Lui SSSI is described as *"Ben Lui Site of Special Scientific Interest (SSSI) is an extensive site situated in the Southern Highlands at the head of Glen Fyne. The SSSI contains four high peaks, with Ben Lui, at 1,130 m, the best known mountain within this western outlier of the Breadalbane Hills. Together with Ben Oss (1,028 m), Beinn Dubhchraig (978 m), Beinn a' Chleibh (917 m) and Meall nan Tighearn (739 m) the area is renowned for its exceptionally rich and varied upland flora. The range of altitude and geology present at the site supports a diversity of habitats including important late snowbed communities on peaks and high corries, ledge and cliff vegetation, heath, montane willow scrub, grasslands, soligenous mires and on, the southern flanks of Meall nan Tighearn, an extensive blanket bog."*

5.2.2 Other Designations of Interest

The Great Trossachs Forest (NNR)
The Great Trossachs Forest is located within the Loch Lomond & The Trossachs National Park, known as Scotland's first National Park. National Parks are areas containing important habitat and species designated to an area that is dedicated to conserve and protect the wildlife. They are specifically designed for people to enjoy them without harming or disturbing the wildlife that is identified there.

The OHL route goes through this area from tower YW079 through to tower YW114.

Ancient Woodland
The OHL route either passes through or goes by areas classified as Ancient Woodland.

5.2.3 Habitats

The OHL passes through a variety of remote rough upland terrain typically characterised by open areas of mountain bog and peat and areas of woodland. The habitats are home to a rich variety of species including otters, red squirrels (*Sciurus vulgaris*), etc. The Park Authority is also initiating schemes to improve biodiversity within its area through projects to restore peatland, improve water quality and woodland connectivity, reintroduce species such as water vole (*Arvicola amphibious*) and control Invasive Non-Native Species (INNS).

5.2.4 Ornithology

Designations at the site, namely Glen Etvie and Glen Fyne Special Protection Area (SPA), are protected for the presence of Golden Eagle (*Aquila chrysaetos).* Due to its wide variety of habitats a wide range of birds are present or visit the area annually i.e., black grouse (*Lyrurus tetrix*), Greenland white-fronted geese (*Anser albifrons flavirostis*) and various wading birds.

5.3 Potential Significant Effects

5.3.1 Potential Solutions Within Designated Areas

In order to identify the potential impacts from the different infringement solution options Table 5.1 identifies those works which will occur in designated areas.

Table 5-1: Potential Solutions Either In Or Within 5km Of Designated Sites

Site	Designated Site Features	Ground re-profiling works	Height increase	Cross-arm replacement
Loch Lomond Woods Special Area of Conservation (SAC)	Otter (*Lutra lutra)* Western Acidic Oak Woodland	YW050 – YW051, YW059 – YW060, YW060 – YW061, YW080 – YW081, YW079 – YW080, YW073 – YW074, YW072 – YW073.	YW061, YW073, YW080, YW098, YW099, YW103, YW104	YW088, YW089, YW111 and YW112.
Glen Etvie and Glen Fyne Special Protection Area (SPA)	Golden eagle (*Aquila chrysaetos)*	YW050 – YW051, YW059 – YW060, YW060 – YW061, YW080 – YW081, YW079 – YW080, YW073 – YW074, YW072 – YW073	YW061, YW073 and YW080	N/A
Glen Falloch Woods Site of Special Scientific Interest (SSSI)	Upland Oak Woodland	YW050 – YW051, YW059 – YW060, YW060 – YW061, YW073 – YW074, YW072 – YW073, YW079 – YW080, YW080 – YW081	YW061, YW073 and YW080	YW088, YW089, YW111 and YW112.
Garabal Hill	Upland Oak Woodland	YW050 – YW051, YW059 – YW060, YW060 – YW061, YW073 – YW074, YW072 – YW073, YW079 – YW080, YW080 – YW081	N/A	N/A
Geal and Dubh Lochs (SSSI)	Hydromorphological mire range	YW059 – YW060, YW060 – YW061,	YW073, YW080	YW088, YW089

	Oligotrophic loch	YW073 – YW074, YW072 – YW073, YW079 – YW080, YW080 – YW081		
Pollochro Woods (SSSI)	Bryophyte assemblage Lichen Assemblage Wet Woodland Wood pasture and parkland	YW072 – YW073, YW073 – YW074, YW079 – YW080, YW080 – YW081	YW061, YW073, YW080	YW088, YW089
Ben Lui (SSSI)	Dalradian Invertebrate assemblage Mineralogy of Scotland Upland Assemblage)	YW050 – YW051 YW059 – YW060 , YW060 – YW061	YW061	N/A
Great Trossachs Forest National Nature Reserves (Scotland) (NNR)	None recorded	YW080 – YW081, YW098 – YW099, YW103 – YW104, YW111 – YW112	YW098, YW099, YW103, YW104	YW088 YW089 YW111 YW112

The access tracks that are within the identified designated areas are shown in Drawing No GIS049, Appendix A.

5.3.2 Potential Impacts

Construction activities associated with the proposed development pose a number of short-term impacts on the ecology of the site and surrounding environment (generally lasting 0 – 1 year post-construction). Construction-phase effects are considered temporary unless otherwise stated.

A summary of the potential significant effects from construction and reinstatement activities are:

- Accidental spills from plant and on-site storage/ construction compounds of fuels and chemicals leading to pollution of habitats and potential harm to a range of species and habitats;
- Increased noise through construction activities leading to disturbance and displacement of foraging, roosting or nesting species;
- Loss of habitat within the proposed development area;
- Damage to the integrity of designated sites; and
- Damage/disturbance/ injury to fauna and flora throughout construction and use of access tracks

The degree of impact associated with each potential solution are considered to be:

- Works associated with ground works and ground reprofiling are anticipated to have a range of potential environmental impacts which could be significant on designated sites and ecological features if not managed adequately;
- Works that are associated with increased tower heights are anticipated to potentially have additional impacts on ornithological features.
- Works associated with the crossarm installation are anticipated to have the least impact on designated sites and ecological features out of all 3 options considered.

5.4 Inclusion or Exclusion from EIAR

Table 5-2 below summarises the biodiversity features that will be included in the EIAR.

Table 5-2: Biodiversity Features to be included in the EIAR

Receptor	Effects	Scoped in
Designated Sites	Degradation of the site through construction	✓
Habitats	Degradation of condition/function, or loss	✓
Ornithology/Protected Species	Degradation/loss of nesting/foraging/breeding habitats, disturbance/ physical harm, population impacts	✓

5.5 Assessment Methodology

The assessment of predicted impacts will be undertaken against a baseline and the significance of effects assessed using standard EIAR criteria (as developed by the Institute of Environmental Management and Assessment (IEMA)).

The methodology for the EcIA will follow the Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine, Version 1.1 (CIEEM, 2018 (updated 2019)). The British Standard for Biodiversity: Code of Practice for Planning and Development (BS 42020:2013) cites the CIEEM EcIA Guidelines as the acknowledged reference on EcIA. The guidelines are consistent with the British Standard, which provides recommendations on topics such as professional practice, proportionality, pre-application discussions, ecological surveys, adequacy of ecological information, reporting, and monitoring.

The assessment will include full details of consultations, survey methods and results, evaluation of Important Ecological Features (IEFs), an assessment of impacts and details of agreed ecological enhancement and/or mitigation measures. A residual effects table will be included. It will consider all direct and indirect, lethal, and non-lethal impacts on ecology that could reasonably occur during construction work and in the operation of the development. Supporting figures will be provided to ensure that the relevant data gathered is presented clearly and informs the assessment process.

Standalone Preliminary Ecological Assessment (PEA) and National Vegetation Classification (NVC) Reports will be produced for each area of works to provide baseline information. Should protected species be identified, further surveys will be undertaken (if required).

In accordance with National Planning Framework (NPF) 4, Biodiversity Net Gain assessment will also be undertaken.

5.6 Mitigation and Enhancement

The following mitigation could be recommended and implement to avoid and/or mitigate any potential impact:

- The construction process should include the appointment of an Ecological/Environmental Clerk of Works (ECoW) to provide advice, pre-works checks (as necessary), and audit adherence to mitigation at key points throughout the project.
- No vegetation removal should take place during peak nesting bird season (March to August inclusive). If this is not feasible, a nesting bird check should be undertaken by a suitably experienced ecologist no more than 48 hours ahead of the required clearance. If a nesting bird is found, an appropriate buffer should be established and maintained by an ECoW until the young have fledged.
- Pre-works checks for protected species before the commencement of works;
- Excavations should be fitted with appropriate covers when unattended, or a shallow-angled plank inserted to allow animals to climb out. Unattended pipelines should be capped to prevent animal access.
- Application of pollution prevention measures and maintenance of an open, free-flowing watercourse.
- Watching briefs for works near sensitive receptors;
- All site personnel should be made aware of ecological constraints such as the potential presence of protected species via induction material and toolbox talk;
- An operational speed limit of 15 mph in and around the site will be set to minimise the potential for wildlife road casualties.
- Construction-phase lighting should be fitted with downlighters or have the column height adjusted to limit spillage of artificial light onto sensitive habitats within and adjacent to the site. Artificial lighting must not illuminate the woodlands, or boundary habitats. Security lighting should be fitted with passive infrared (PIR) sensors or timers to minimise lit time.

6 GEOLOGY AND SOILS

6.1 Introduction

This Section of the report will consider the Geology and Soils below the towers and associated spans that are identified as requiring uprated due to the presence of infringements. It also considers the underlying nature below the route of the access tracks.

6.2 Baseline Conditions

6.2.1 Bedrock geology

BGS 1:50,000[2] solid geology mapping (provided in 179852-GIS029, GIS030 and GIS031 in Appendix A) shows the entire study area is underlain by the Southern Highland Group bedrock that consists of psammites and semipelite rocks of the Ben Ledi Grit Formation with igneous intrusions of batholiths, plutons, dykes and sills in areas.

The Ben Ledi Grit Formation were sedimentary in origins formed in deep seas that were later altered by low-grade metamorphism. BGS Lithological description[3] states that this formation comprises "*Metasandstone, arenite to wacke, pale to dark grey, fine- to very coarse-grained, locally gritty and pebbly, interbedded with semipelite and pelite; contains brown-weathering calcareous nodules in upper part. Generally becomes coarser-grained upwards."*

6.2.2 Superficial Geology

The information on superficial deposits overlying a large part of the OHL route is unavailable on the BGS 1:50,000 map. In the remaining areas where data is present the bedrock is shown to be overlain with diamicton/till (previously called boulder clay), morainic, alluvium, river terrace and peat deposits.

The towers and access tracks in which superficial deposits are known are listed in Table 6-1 and shown on Drawing Nos 179852-GIS061, 062 and 063, Appendix A.

Table 6-1: Superficial Geology

Superficial Geology	Towers	Access Tracks
Till and Morainic Deposits	YW050, YW051, YW059	Access track to Towers YW050 and YW051. Access track to Towers between YW072 to YW075. Access tracks as shown in Area A and B Drawings.
River Terrace Deposits	N/A	Access tracks as shown in Area C Drawings.
Till / Diamicton Deposits	YW103, YW104, YW111 and YW112	Access track to Towers located in the southern section of Area C Drawings.

[2] https://geologyviewer.bgs.ac.uk/
[3] https://webapps.bgs.ac.uk/lexicon/lexicon.cfm?pub=BLEG

Deposit information unavailable	All remaining towers	All remaining access tracks.

6.2.3 Soils

The National Soil Map of Scotland[4] was referred to and the soils within the study area are identified as being a part of the Strichen Soil Association in which the parent material for each soil is derived from schists and schistose grits of the Dalradian. The component soils and associated landforms underlying the identified towers and access tracks are provided in Table 6.2 and shown in Drawing Nos 179852-GIS055, 056 and 057, Appendix A).

Table 6-2: Soils and Landforms

Soils	Landforms	Towers	Access Tracks
Peaty Gleyed Podzols with either rankers or peaty gleys with dystrophic semi-confined peat.	Rugged hills with strong and steep slopes: very rocky or Hummocky valley and slope moraines	All towers located in Area A Drawings. YW073, YW074 and YW079.	Access tracks as shown in Area A and B Drawings.
Brown Earths with brown rankers with humus-iron podzols	Hills and valley sides with steep and very steep slopes: very rocky.	YW072.	Part of the access track to Tower YW072 as shown in Area B Drawing.
Humus Iron Podzols with peaty gleys or peaty gleyed podzols.	Hummocky valley moraines or hills and valley sides with strong to very steep slopes: moderately rocky.	YW080, YW081, YW098, YW099, YW103, YW104, YW111 and YW112 (all tower locations shown in Area C Drawing.	Sections of the access tracks as shown in Area A, B and C Drawings.

6.2.4 Carbon and Peatland

The Carbon and Peatland map was created by Scottish Natural Heritage (now NatureScot) and is based on James Hutton Institute data providing a consolidated spatial dataset.[5] The map gives a value to indicate the likely presence of carbon-rich soils, deep peat and priority peatland habitat for each individually mapped area, at a coarse scale. The Carbon and Peatland classes are identified in Table 6-3.

Table 6-3: Carbon and Peatland Classes

Class Description	Indicative Soil	Indicative Vegitation
Class 1 - Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas likely to be of high conservation value	Peat soil	Peatland
Class 2 - Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas of potentially high conservation value and restoration potential	Peat soil with occasional peaty soil	Peatland or areas with high potential to be restored to peatland

[4] https://map.environment.gov.scot/Soil_maps/?layer=1
[5] https://soils.environment.gov.scot/maps/thematic-maps/carbon-and-peatland-2016-map/

Class 3 - Dominant vegetation cover is not priority peatland habitat but is associated with wet and acidic type. Occasional peatland habitats can be found. Most soils are carbon-rich soils, with some areas of deep peat	Predominantly peaty soil with some peat soil	Peatland with some heath
Class 4 - Area unlikely to be associated with peatland habitats or wet and acidic type. Area unlikely to include carbon-rich soils	Predominantly mineral soil with some peat soil	Heath with some peatland
Class 5 - Soil information takes precedence over vegetation data. No peatland habitat recorded. May also include areas of bare soil. Soils are carbon-rich and deep peat.	Peat soil	No peatland vegetation
Mineral soil - Peatland habitats are not typically found on such soils (Class 0)	Mineral soils	No peatland vegetation
Unknown soil type – information to be updated when new data are released (Class -1)	Not classified (unknown soil type)	Not applicable
Non-soil (e.g. loch, built up area, rock and scree) (Class -2)	No soil	Not applicable

The Carbon and Peatland maps are provided in Drawing Nos 179852-GIS058, 059 and 060, Appendix A and show that a large proportion of the towers and access roads are located on soils classed as 0 indicating the presence of mineral soils with no peatland vegetation.

Towers YW50, YW051, YW052, YW061, YW074, YW075, YW079 are located where Class 2 soils are identified. This also includes the access track to towers YW072, YW073, YW074, and sections of the access track routes shown in Area A Drawings. These soils are nationally important carbon-rich soils, deep peat and priority peatland habitat where areas of potentially high conservation value and restoration potential.

Tower YW073 and the access track within this area is located on Class 5 soils in which no peatland habitat is recorded and may also include areas of bare soil. Soils are classed as carbon-rich and deep peat.

6.2.5 Land Capability

The National Scale Land Capability for Agriculture map provides information on the types of crops that may be grown in different areas dependent on environmental and soil characteristics. The Land Capability for Agriculture Classes and their associated definitions are shown in Table 6-4.

Table 6-4: Land Capability for Agriculture Classes

Land Capability for Agriculture Class	Definition
Class 1	Land capable of producing a very wide range of crops
Class 2	Land capable of producing a wide range of crops
Class 3.1	Land capable of producing consistently high yields of a narrow range of crops and/ or moderate yields of a wider range. Short grass leys are common
Class 3.2	Land capable of average production though high yields of barley, oats and grass can be obtained. Grass leys are common
Class 4.1	Land capable of producing a narrow range of crops, primarily grassland with short arable breaks of forage crops and cereal

Class 4.2	Land capable of producing a narrow range of crops, primarily on grassland with short arable breaks of forage crops
Class 5.1	Land capable of use as improved grassland. Few problems with pasture establishment and maintenance and potential high yields
Class 5.2	Land capable of use as improved grassland. Few problems with pasture establishment but may be difficult to maintain
Class 5.3	Land capable of use as improved grassland. Pasture deteriorates quickly
Class 6.1	Land capable of use as rough grazings with a high proportion of palatable plants
Class 6.2	Land capable of use as rough grazings with moderate quality plants
Class 6.3	Land capable of use as rough grazings with low quality plants
Class 7	Land of very limited agricultural value
N/A	Urban

The Land Capability for Agriculture maps within the study area are shown in Drawing No's 179852-GIS044, 045, 046.

Towers and the associated access tracks to YW099, YW0103, YW104 and YW111 are located within the areas classed as 5.2 and 5.3 which is defined as land capable of use as improved grassland with a few problems with pasture establishment but may be difficult to maintain (Class 5.2) or deteriorates quickly (Class 5.3).

Towers and the associated access tracks to YW050 to YW061, YW072 to YW074, YW079 to YW081 YW098 and YW112 are located within the area classed as 6.1, 6.2 and 6.3 which is defined as land capable of use as rough grazing with high (Class 6.1), moderate (Class 6.2) or low (6.3) quality plants.

6.3 Potential Significant Effects

Works within peat areas have the potential to result in disturbance, loss, pollution or instability of peat at a local level. Removal or degradation of peat-forming vegetation, particularly Sphagnum mosses, may hinder peat regeneration (typical accumulation rates in Scotland are approximately 0.5-1mm per year).

The degree of significant effects will be dependent on whether the existing access tracks require improved or where none are present, constructed. It will also be dependent on the solution identified with removal of the infringement through reprofiling having the largest significant effect. The positioning of the temporary works area and site compound could also give rise to significant effects.

6.4 Inclusion or Exclusion from EIA

Table 6-5 below summarises the Geology and Soil features that will be included in the EIAR.

Table 6-5: Geology and Soil Features to be included in the EIAR

Receptor	Effects	Scoped In
Soils including peat	Disturbance / loss, instability	✓

6.5 Relevant Guidance and Assessment Methodology

The assessment will be conducted in accordance with current legislation and good practice guidance including:

- Peatland Survey: Guidance on Developments on Peatland (Scottish Government and NatureScot);
- Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments (Scottish Government);
- Pollution Prevention Guidelines and Guidelines for Pollution Prevention 1 – 26 (as appropriate); and
- Peatland Action Technical Compendium (NatureScot).

The methodology used for this Chapter will be:

- Desk based study of published documents and planning policies, OS maps, geology, soils and topography;
- Establish Baseline Conditions by undertaking a Phase 1 and 2 peat depth survey of the relevant areas;
- Identify potential environmental impacts;
- Identification and assessment of mitigation measures;
- Production of a Peat Restoration Plan; and
- Statement of residual effects.

6.6 Mitigation and Enhancement

Mitigation seeks, first, to avoid adverse impacts and, where impacts are unavoidable, to reduce the significance of residual effect to an acceptable level. The peat depth survey data will allow areas to be determined where potential impacts may occur. The gathered information could inform the preferred solution to remove the infringement or the design/location of the access tracks, temporary works area and site compound to avoid or reduce adverse impacts.

Where impacts are unavoidable then mitigation measures seek to enhance and compensation, where possible, to provide the best practicable option. The magnitude and extent of effects identified will inform and influence the type of mitigation suitable for the site. A peat restoration plan will be produced to outline the best types of mitigation measures for the site. As well as active restoration measures, recommended mitigation measures could involve the following

- minimising the extent of vegetation stripping at any one time.
- strategic drainage interventions.
- sediment interception.
- maintaining a minimal depth of basal peat.
- stockpiling and replacement of peat turves to facilitate rapid re-establishment of peat forming conditions.
- transplanting of sphagnum moss plugs.
- protecting areas of shallow peat and GWDTE.
- vegetated watercourse buffers.

Mitigation will be discussed and agreed with SPEN and LLTNP, supported by engagement with other stakeholders as necessary, and a summary of the residual impacts following mitigation will be provided in the EIAR.

7 WATER ENVIRONMENT

7.1 Introduction

This Section provides an appraisal of the implications of the proposed development on the water environment. The water environment is considered to encompass hydrology, hydrogeology, artificial drainage systems and flood risk. The assessment will identify sensitive issues by establishing the current baseline and examining the proposed works within this context.

The Water Framework Directive (WFD) (Council Directive 2000/60/EC) aims to protect and enhance water bodies within Europe. This requires that there is no deterioration in the quality of surface or groundwater bodies and aims to achieve good ecological status or potential. The implications of the WFD must be considered when assessing this project and details provided of how compliance will be achieved.

7.2 Baseline Condition

A desktop review of Scotland's Environment Interactive Map was undertaken to identify the water bodies (river, loch, estuary and coastal waterbodies) within the study area.

7.2.1 Groundwater and Hydrogeology

The groundwater body below the majority of the study area is identified as Cowal and Lomond (ID: 150869) with the Trossachs (ID: 150680) groundwater body located below the southern area. Both aquifers are described as having a low to very low productivity consisting of small amounts of groundwater in the near surface weathered zone and secondary fractures.

7.2.2 Surface Water Quality and Flood Risk

The study area currently drains mainly through natural processes of overland flow. There are a number of surface water bodies that are present in proximity to the OHL route.

Table 7-1 provides details of OHL tower locations located in proximity to water bodies, their SEPA water quality classification and flood risk.

Table 7-1: Surface Water bodies

Water Body	Description	Connectivity to SIte
Dubh Eas/Allt Nn Caorainn [ID: 10167]	This is identified by SEPA as a heavily modified waterbody with bad ecological potential. A review of the SEPA flood maps denotes this River as having a "High Likelihood" of surface water flooding with a 10% chance of it happening in any one year.	Towers YW050 and YW051 and the access track is located within the area identified as being at risk of flooding. Towers YW059, YW060 and YW061 are located within the vicinity of the burn but out with the flood zone.

Allt Arnan	No SEPA water quality classification identified. A review of the SEPA flood maps denotes this burn as having a "High Likelihood" of flooding with a 10% chance of it happening in any one year.	Although the OHL crosses the burn no tower spans identified as requiring infringements to be removed are located within vicinity of it.
River Falloch [ID:10166]	Heavily Modified Water Body with an overall SEPA classification identified as good ecological potential.	Although the OHL crosses the burn no tower spans identified as requiring infringements to be removed are located within vicinity of it.
Glengyle Water [ID: 4711]	This water body has an overall SEPA classification of good water quality. A review of the SEPA flood maps denotes this River as having a "High Likelihood" of flooding with a 10% chance of it happening in any one year.	Towers YW072, YW073, YW074, YW079, YW080, YW081 and access roads are located within the vicinity of this river but are out with the flood zone.
Loch Katrine [ID: 100261]	Heavily Modified Water Body with an overall SEPA classification identified as good ecological potential. A review of the SEPA flood maps denotes this water body as having a "High Likelihood" of flooding with a 10% chance of it happening in any one year.	Towers YW098, YW099, YW103 and YW104 are located within the vicinity of Loch Katrine but out with this water body's flood zone. The access tracks to these towers however are and the access tracks are located within or close to the zone at risk of flooding.
Loch Arklet [ID: 100263]	Heavily Modified Water Body with an overall SEPA classification identified as good ecological potential. A review of the SEPA flood maps denotes this water body as having a "High Likelihood" of flooding with a 10% chance of it happening in any one year.	Towers YW098, WY099, YW103, YW104, YW111, YW112 and the access tracks are located within the vicinity of Loch Arklet but out with this water body's flood zone.

7.2.3 Ecological Designations

There are no ecological designations within the water environment in proximity to the identified OHL tower locations.

7.3 Potential Significant Effects

7.3.1 Sediment Discharges

Works on site have the potential to lead to increased sediment loading in watercourses, for instance, as a result of erosion and runoff over areas of earth and groundworks. The key impacts identified are:

- Increase of sediment laden water impacting water quality and ecology.
- Potential surface water flow alterations caused by the alteration of existing or installation of temporary access tracks; and
- Potential increase in flood risk downstream of the works .

7.3.2 Contaminated Discharge

Machinery used during the constructions works could result in accidental pollution incidents which could affect the quality of surface water or groundwater within, or downstream of, the site.

Oils, fuels and hydraulic fluids are hazardous (List I) substances under the Groundwater and Priority Substances (Scotland) Regulations 2009, and their ingress to groundwater must be prevented. Oil and fuel spillages would also have a detrimental impact on surface water quality and could affect fauna and flora.

The most likely sources of oils, fuels and other hydraulic fluids at the site are:

- Spillage or leakage of oils, fuels or hydraulic fluids from site vehicles and machinery; and
- Spillage of oil or fuel from refuelling machinery.

7.3.3 Flood Risk

The flood risk associated with specific towers YW050 and YW051 need to be considered as these locations and associated access tracks are located in an area of 'High Likelihood' of surface water flooding as identified on the SEPA flood maps. Potential significant effects in this area are associated with an increased risk of sediment and contaminated discharges during a flood event.

7.4 Inclusion or Exclusion from EIA

Table 7-2 below summarises the biodiversity features that will be included in the EIAR.

Table 7-2: Water Environment Features to be included in the EIAR

Receptor	Effects	Scoped in
Hydrology	Temporary changes to surface water flow regime and alterations to drainage ditch network. Increased sediment loading and risk of contaminant discharges. Impact on hydromorphological features and processes.	✓
Flood risk	Contaminated discharge, sediment discharges	✓
Water Supplies/ abstraction	Flow and level alterations, increased sediment discharges, contaminant discharges.	✓

7.5 Relevant Guidance and Assessment Methodology

The assessment follows standard EIA procedures which include:

- Desk-based review of the design of the proposed development in relation to the local water environment and soils;
- Consultation with key stakeholders to obtain relevant information and to ensure their concerns are addressed within the study area;
- Establishing the existing baseline conditions:
  - Review topography, soils, geology and ground conditions at the site and environs;
  - Review of hydrology, catchment characteristics, and water quality conditions; and
  - Reporting of baseline conditions to provide a basis for assessment of the potential impact.

- Impact Assessment:
  - Identification of sensitive receptors (including private water supplies) and environmental constraints;
  - Identification of potential water crossing points;
  - Identification of potential impacts;
  - Assessment of impact magnitude;
  - Identification and assessment of mitigation measures to reduce or avoid any potential impacts of the proposed development; and
  - Statement of residual effects.

7.6 Mitigation and Enhancement

The following mitigation could be recommended and implement to avoid and/or mitigate any potential impact:

- The construction process should include the appointment of an Ecological/Environmental Clerk of Works (ECoW) to provide advice, pre-works checks (as necessary), and audit adherence to mitigation at key points throughout the project.
- Pre-works checks for unidentified water bodies and water body crossings before the commencement of works.
- Application of pollution prevention measures and maintenance of an open, free-flowing watercourse.
- All site personnel should be made aware of constraints such as the water bodies in proximity to specific areas via induction material and toolbox talk.

8 LANDSCAPE AND VISUAL AMENTIY

8.1 Introduction

This chapter addresses the potential significant adverse effects of the Proposed Development on the landscape and visual resources of the site and surrounding area. Landscape and visual resources are defined respectively within paragraph 3.21 of the Guidelines for Landscape and Visual Impact Assessment (GLVIA)[6] as:

"…*the constituent elements of the landscape, its specific aesthetic or perceptual qualities and the character of the landscape"* and *"…the people who will be affected by changes in views or visual amenity at different places*".

To help determine the need for, and to ascertain the potential scope of a Landscape and Visual Impact Assessment (LVIA) as part of an EIA, an appraisal has been undertaken to identify the following:

- The landscape character of the site and surrounding area;
- The coverage of any landscape designations across the site and surrounding area;
- Important views and viewpoints towards the site from the surrounding landscape;
- Any potentially significant landscape and visual effects during the project construction and post-completion; and
- Recommendations for mitigating any potentially significant adverse effects.

8.2 Baseline Conditions

The purpose of the baseline assessment is to identify the existing landscape and visual resource of the site and surrounding area against any potentially significant effects of the Proposed Development that are predicted. The assessment of potential receptors within a 5km study include the following:

- The site and its setting;
- Landscape character;
- Landscape designations; and
- Key views and visual receptors.

8.2.1 The Site and Setting

As noted in Section 5.2.3, the existing OHL within the LLTNP passes through a variety of remote rough upland terrain typically characterised by open areas of mountain bog, peat and areas of woodland.

The construction phase could impact the Landscape and Visual amenity of the area through the installation of work areas, site compound and presence of workers and plant. Once operational the only changes from a Landscape and Visual perspective is if the preferred solution to remove the infringement involves the increase in tower heights.

Table 8-1 below outlines the tower locations where changes in tower heights have been identified as a possible solution to remove the infringement.

[6] Landscape Institute and the Institute of Environmental Management and Assessment (2013). *The Guidelines for Landscape and Visual Impact Assessment, version 3.*

Table 8-1: Landscape Character Types

Tower	Proposed Increase in Height
YW061, YW073, YW080, YW103 and YW104	Proposed height extension of 3.2m.
YW098 and YW099	Proposed height extension of 6.4m

8.3 Landscape Character

Landscape Character Types are defined by NatureScot as a combination of elements and features that define one environment to another through mapping and descriptions[7]. Landscape Character Types form an important part of the Landscape Character Assessment (LCA), which acts as a baseline study to determine the change a development may have on a landscape. By assessing the types of landforms across an area, landscape tools and techniques, including LVIA, can be guided.

A review of the Scottish Landscape Character Types:[8] identifies the towers in which an increase in height could be a possible solution is located within Highland Summits – Landscape Character 251 (LCT 251)

NatureScot identify the key characteristics of LCT 251 as follows:

- *High mountains generally lying above 800 metres, but lower and intensely craggy in the core of the Trossachs where geology is particularly complex;*
- *Steep slopes often covered in scree;*
- *Narrow rocky ridges, deeply scooped corries and rocky gullies on many of these mountains;*
- *Narrow glens deeply cut into the mountains, often contain fast-flowing burns and waterfalls;*
- *Strongly patterned landscape with exposed rock, crags, small lochs and myriad water courses significantly increasing complexity;*
- *Simple vegetation cover is, largely comprising semi-natural grassland with patchy heather and ground-hugging alpine species on upper slopes and summits. Bracken and bog occurs on lower slopes and within glen floors. Coniferous forestry present on some lower slopes, extending up into glens;*
- *Broadleaf woodlands rare, confined to steeper slopes with fragments of oak and birch tracing burns and gullies;*
- *Very sparsely populated with roads and dispersed settlement occurring only on its fringes;*
- *Impounded lochs, coniferous forestry and hydroelectric infrastructure and transmission lines close to the mountains northwest of Loch Lomond;*
- *Highly visible massive peaks and ridges of the mountains forming a scenic rugged backdrop to the lower settled loch shores, glens and straths;*
- *Instantly recognisable mountain forms such as the Cobbler and Ben Lomond. Ben Ledi, Ben Vorlich and Ben Lomond are important landmark features, marking the Highland edge seen widely from the Central Lowlands of Scotland;*
- *Popular mountains with walkers because of their highly natural and rugged character, and the presence of 'Munro' and 'Corbett' peaks. The higher summits offer extensive views;*
- *Distinct sense of wild character of the summits due to their rugged and natural qualities, especially away from hydro-electric infrastructure and poorly integrated forestry;* and

[7] https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/what-landscape-character-assessment
[8] https://www.arcgis.com/apps/webappviewer/index.html?id=e3b4fbb9fc504cc4abd04e1ebc891d4e&extent=-2030551.0017%2C6851563.2052%2C1100309.6769%2C8923312.4198%2C102100

- *Where snow is held on the high summits and the corries of Ben Lui and Ben Oss long in the year, this accentuates the exposure and wild character.*

8.4 Landscape Designations

In addition to Landscape Character, the effects on the Special Landscape Qualities (SLQs) of the National Park are a key consideration in addressing the potential significant landscape effects of the Proposed Development. NatureScot have identified Landscape areas of the National Park to determine the SLQs dependent on the location as shown in Figure 8-1.

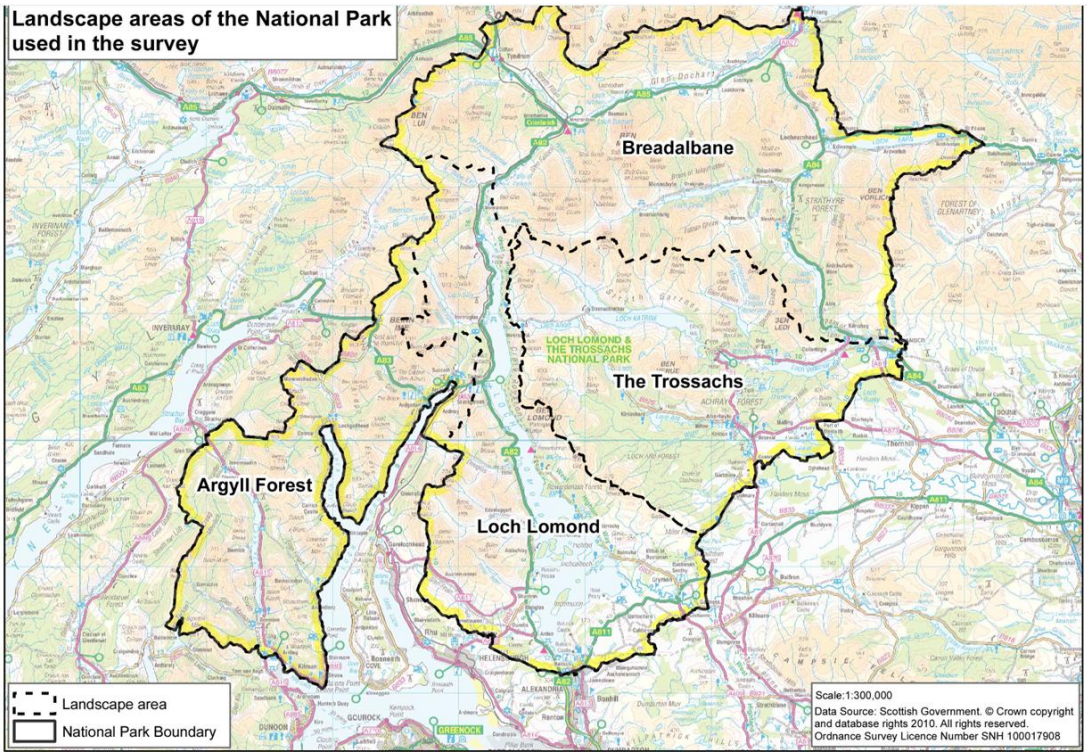

Figure 8-1: Special Landscape Qualities areas

Towers YW061, YW073 and YW080 are located within the Breadalbane SLQ with Towers YW098, YW099, YW103 and YW104 located in The Trossachs SLQ. The SLQ of LLTNP are summarised as:

General LLTNP SLQ's

- A world-renowned landscape famed for its rural beauty;
- Wild and rugged highlands contrasting with pastoral lowlands;
- Water in its many forms;
- The rich variety of woodlands;
- Settlements nestled within a vast natural backdrop;
- Famous through-routes;
- Tranquillity; and
- The easily accessible landscape splendour.

Breadalbane SLQ's

- *Steep mountains and long glens;*
- *Crossroads within remote mountain ranges;*
- *A landscape of distinctive glens and straths ;*
- *The narrow Strathyre and Loch Lubnaig ribbon;*

- *Beautiful Balquidder;*
- *Wide and Straight Loch Earn;*
- *The rocky pass of Glen Ogle; and*
- *Killin and the Falls of Docahrt.*

The Trossachs SLQ's

- A traditional 'Gateway to the Highlands';
- A harmonious concentration of lochs, woods and hills Rugged Ben Venue, the centrepiece of the Trossachs Loch Katrine, the 'Queen of the Trossachs';
- A landscape of beautiful lochs;
- The romance of the Trossachs;
- The resort of Aberfoyle and the Duke's Pass;
- The curious wooded hillocks of Aberfoyle;
- The gateway town of Callander; and
- The tranquil Lake of Menteith.

8.4.1 Visual Amenity Receptors

Potential visual receptors are identified as recreational users such as hillwalkers and mountain bikers. The towers, work areas, site compound, site workers and plant may also be visible to users of the road network and local residents.

8.5 Potential Significant Effects

The National Park is an important landscape protected for its outstanding scenic value. Any development or change within the environment has the potential to result in Significant effects to any identified receptors. For the uprates to the OHL route, the effects are considered to relate to:

- The temporary works during the construction phase.
- The solution to increase the height of specific towers to remove the infringement during the operational phase.

While there may be some impact to the Landscape Character and SLQ as a result of the above, this is anticipated to be minimal as the construction phase is temporary in nature and the OHL route already exists. However, the visual amenity for recreational, road users and local residents could be affected.

8.6 Inclusion or Exclusion from EIA

For the reasons outlined above, it is considered that Landscape and Visual Impacts as identified in Table 8-2 should be scoped in.

Table 8-2: Landscape and Visual Features to be included in the EIAR

Receptor	Effects	Scoped In
Recreational, road users and local residents.	Changes in viewpoints and visual amenity	✓

8.7 Relevant Guidance and Assessment Methodology

An LVIA will be provided in line with the NatureScot Landscape Character assessment and include the following details:

- A desktop review of relevant policy;
- Site visits and fieldwork to determine key landscape features, identify receptors, character of the surrounding landscape and define visibility;
- Identification of the zone of theoretical visibility and key views;
- Assessment of potential impacts on visual amenity; and
- Preparation of outline mitigation measures.

Computer aided techniques will be used to assist the evaluation of the visual effects as a result of tower heights increasing. A Zone of Theoretical Visibility up to a distance of 5km will be generated, with the baseline mapping incorporating major areas of existing woodland and built development. The proposed viewpoints would be agreed with the Council at the outset of the landscape and visual assessment. Photomontages would be prepared in order to illustrate the impact from the agreed viewpoints.

8.8 Mitigation and Enhancement

It is considered that the opportunities for mitigation and enhancement of visual impacts are limited.

9 ARCHAEOLOGY AND CULTURAL HERITAGE

9.1 Introduction

An initial review of the study area with readily available historic environment resources was undertaken to gauge the nature of the known assets that may be impacted by the proposed works.

9.2 Baseline Conditions

9.2.1 World Heritage Sites

A review of Pastmaps[9] and Scotland's Environment[10] identified that there were no World Heritage Sites within proximity of the area covered by the works.

9.2.2 Scheduled Monuments

A review of Pastmaps and Scotland's Environment identified there were no Scheduled monuments in proximity of the area covered by the works.

9.2.3 Conservation Areas

There are no Archaeological or Cultural Conservation Areas within proximity of the area covered by the works.

9.2.4 Garden & Designated Landscapes

There are no Garden & Designated Landscapes within proximity of the area covered by the works.

9.2.5 Battlefields

There are no battlefields within proximity of the area covered by the works.

9.2.6 Listed buildings

There are no listed buildings within the proximity of the towers located in Area B and C.

A number of Category B and C listed buildings have been identified in Area C as detailed in Table 9-1 and shown in Drawing No 179852 GIS007, Appendix A.

[9] https://pastmap.org.uk/map
[10] https://map.environment.gov.scot/sewebmap/

Table 9-1: Listed Buildings

Category	Description
Category B (LB50308)	Stronachlachar, Loch Arklet to Loch Katrine aqueduct outlet, weirs and water channel with railings and gates (former Glasgow corporation water works).
Category B (LB50297)	Loch Arklet Aqueduct Intake Including Railings, Gates and Walls (Former Glasgow Corporation Water Works).
Category C (LB50464)	Stronachlachar, Pier Building and Pier Including Revetment Walls And Railings.
Category C (LB50299)	Milepost at NN40347/08862
Category C (LB50300)	Milepost at NN41334/07640

9.3 Potential Significant Effects

The proposed works are not expected to have any impact on archaeology or cultural heritage, including the Category B and C listed buildings noted above.

9.4 Inclusion or Exclusion from EIA

Based upon the desk study, the proposed works are not anticipated to result in discernible loss of the historic environment, and as a result are excluded from forming a full chapter in the EIAR.

10 TOPICS NOT REQUIRING FULL EIA

10.1 Introduction

This section incorporates those issues which are relevant to the proposed development but do not merit or justify a full chapter within the EIAR.

10.2 Air Quality

The section of the existing YW route in which uprated works have been identified is located within the LLTNP where air quality is considered to be good. A review of the Scottish Pollutant Release Inventory (SPRI) does not identify any industrial activities which require to report their pollutant releases to air within the surrounding area of the OHL route.

There will be an increase in traffic levels during the construction phase as a result of construction workers, plant and materials being brought to and from the site. Due to the nature of the OHL uprate works, there is anticipated to be no more than ten associated vehicle movements for each tower location in which works are required. As such the impact on the ambient air quality is considered to be minimal.

There is potential for dust to be generated as a result of the construction works. This is particularly relevant to the areas where ground reprofiling will be required. However, it is considered that any impacts can be minimised through the use of good construction practises.

As the proposed works are entirely limited to upgrading the current OHL, there will be no anticipated effect on local air quality post construction. The works will not significantly alter the current infrastructure maintenance requirements and therefore, the effects of transport emissions associated with the operation and maintenance of the scheme are also not considered to be significant.

10.3 Climate Change

Climate change has taken a prominent position within policy and legislation at a national level, with the Climate Change (Scotland) Act 2009 creating a long-term framework for ensuring reduction in Scottish Greenhouse Gas (GHG) emissions. The proposed works are necessary to ensure the long-term security of transferring electricity generated from green sources such as wind and hydro power to the locations they are needed thereby reducing the reliance on fossil fuels.

Similar to any development project, the proposed development will have some GHG associated with it through vehicle and plant emissions. However, considering the scale of the proposed development, it is not anticipated to have any significant effect on climate change during the construction and operational phase. Should the reprofiling option to remove the infringement occur within areas defined as peatland then this could impact climate change through release of carbon dioxide. Similarly, should access tracks require to be upgraded or installed within peatland areas this could also have an impact as well as the location of the works area and site compound. The impact on climate change will be considered in the Geology and Soils Chapter of the EIAR.

10.4 Noise

Due to the rural location of the site, the baseline noise and vibration conditions are considered to be low. Existing levels are dominated by natural sources i.e. wildlife, trees rustling, etc. Some noise from vehicle and agricultural activities maybe evident in places along with noise from leisure activities i.e. small aircraft, water users etc.

There are no residential properties present along the majority of the OHL route. Some of the towers in which works are necessary are located within the vicinity of the hamlet of Inverarnan (at the northern end) and Stronachlachar (at the southern end). However, construction works will occur during daylight hours only and are considered to be temporary in duration. With the employment of good construction practises, the impacts on these residents should be minimised.

Once the works are complete, it is considered that the noise environment will return to pre-existing levels.

10.5 Traffic and Transport

There is the potential for environmental effects to arise from vehicle movements during the construction phase of the development along the access tracks. However, due to the volume of traffic anticipated, the impact on traffic and transport on the local road network is considered to be minimal.

10.6 Population and Human Health

The work to the high voltage OHL can cause death if not managed appropriately. A site-specific Health and Safety Risk Assessment will be completed prior to works commencing. This will detail procedures to ensure the safety of site workers and members of the public and will be adhered to throughout the construction phase. The impacts on population and human health are therefore considered to be minimal.

10.7 Major Accidents and Natural Disasters

The proposed development is not located within an area of significant seismic activity, nor are climatic factors prone to creating disaster such as tsunamis, hurricanes or catastrophic flooding.

As noted for Population and Human Health, construction works will adhere to the site specific Health & Safety Risk Assessment. The risk of significant accidents to occur is therefore considered to be unlikely. Similarly, given the need to follow H&S regulation and guidance, the risk of accidents during the operational phase is also considered unlikely.

11 CONCLUSIONS

The conclusions of the detailed scoping appraisals are summarised in Table 11-1.

Table 11-1 Summary of Scoping Appraisals

Topic	Scoped In/Out	Comments
Biodiversity	In	Key elements for focus will be consideration of potential for impact to ecologically sensitive receptors (including ornithological receptors) as a result of the proposed construction activities.
Water Environment	In	The assessment will focus on potential for impact to the water environment associated with the construction activity. This will incorporate the consideration of impacts from pollution, construction run-off and suspended solid release, works within flood risk area and any proposed water crossings associated with the works.
Geology and Soils	In	The proposed construction works incorporate targeted areas of ground reprofiling and potential impact to existing geology associated with temporary works. The EIAR will incorporate specific assessment of the proposed construction activities in relation to potential impacts to existing geology, including peat.
Landscape and Visual Amenity	In	The works incorporate the increase in height of existing OHL towers up to 6.4m above existing levels. The EIAR will incorporate consideration of the landscape and visual amenity impacts associated with the construction works and subsequent operational phase, including the increase in tower height.
Archaeology and Cultural Heritage	Out	Based upon the desk study, the proposed works are not anticipated to result in a discernible loss of the historic environment, and as a result are excluded from EIA.
Issues Not Requiring Full EIA	In	It is proposed to include a chapter within the EIAR to provide a summary of the individual topics covered within this section. This chapter will not draw conclusions on the level of significance based upon detailed methodology (as per the other chapters outlined throughout the EIAR), but instead offer a synopsis of relevant information, alongside a relevant level of assessment specific to each feature of this chapter.

APPENDICES

A DRAWINGS

AREA A DRAWINGS

AREA B DRAWINGS

AREA C Drawings

B YX OHL UPRATE INFORMATION

C ACCESS DRAWINGS